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Vector EOF Analysis of SSH and Wind Stress for
the GEOSAT Pre-ERM mission in the Gulf of
Mexico.

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Sea Surface Height (SSH) data collected during
the Pre-exact Repeat Mission of the U.S. Navy's
GEOSAT satellite were analyzed together with
wind stress data from FNOC to determine basin
scale patterns of coherent variability. Time
series of SSH variations were formed from
altimeter cross-over points in 3-degree
diamond-shaped grids in the Gulf of Mexico
(GOM). Similarly, wind stress time series were
formed at selected grid points in the GOM and
in the North Equatorial Trade wind region of
the Atlantic.

The two sets of time series, one year in
length, were subjected to Empirical Orthogonal
Function analysis. The first EOF mode
contained more than twice the variance of the
second mode, with the largest amplitudes
(eigenvectors) of the pattern occurring just
west of the loop current intrusion for SSH and
in the western and northern Gulf for wind
stress. A comparison is made with similar
combined data for the Northern Indian Ocean
where ocean response to Monsoon winds is
strong, and better understood. In addition to
the EOF analysis, events are followed through
the Gulf in both wind and SSH records.

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